

# Claims

- [c1] 1. A parallel-coupled-resonator coupled line filter with open-and-short end, comprising:  
an input port, used to receive an input signal;  
a first resonator, wherein the first resonator is a bent resonator and is coupled to the input port;  
a second resonator, wherein the second resonator is a resonator whose both ends are shorted to ground, and coupled to the first resonator;  
a third resonator, wherein the third resonator is a bent resonator, and is coupled to the second resonator and cross coupling exits with to the first resonator; and  
an output terminal, coupled to the third resonator to output signal.
- [c2] 2. The parallel-coupled-resonator coupled line filter with open-and-short end of claim 1, wherein the input port and the output port are facing in a same direction, resulting in a weak cross coupling.
- [c3] 3. The parallel-coupled-resonator coupled line filter with open-and-short end of claim 1, wherein the input port, the first resonator, the second resonator, the third resonator, and the output port are manufactured on a sub-

strate.

- [c4] 4. The parallel-coupled-resonator coupled line filter with open-and-short end of claim 3, wherein the dielectric constant of the substrate is 3.38, and the thickness of the substrate is 20 mils.
- [c5] 5. The parallel-coupled-resonator coupled line filter with open-and-short end of claim 3, both ends of the second resonator is shorted to ground.
- [c6] 6. The parallel-coupled-resonator coupled line filter with open-and-short end of claim 3, wherein the length of the first resonator and the third resonator is 612 mils, the length of the second resonator is 636 mils, and the couple distance between the resonators is 4 mils.
- [c7] 7. A parallel-coupled-resonator coupled line filter with open-and-short end, at least comprising:
  - an input terminal, used to receive an input signal;
  - a first resonator, wherein the first resonator is a bent resonator with both ends open circuited;
  - a second resonator, wherein the second resonator is a bent resonator whose both ends are shorted to ground;
  - a third resonator, wherein the third resonator is a bent resonator with both ends open circuited, and is crossly coupled to the first resonator; and

an output port, used to output signal.

- [c8] 8. The parallel-coupled-resonator coupled line filter with open-and-short end of claim 7, wherein the input port and the output port are facing in the same direction, resulting in a weak cross coupling.
- [c9] 9. The parallel-coupled-resonator coupled line filter with open-and-short end of claim 7, wherein the input port, the first resonator, the second resonator, the third resonator, and the output port are manufactured on a substrate.
- [c10] 10. The parallel-coupled-resonator coupled line filter with open-and-short end of claim 9, wherein the both ends of the second resonator are shorted to ground.